

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 56

April, 1954

No. 664

STUDIES IN THE CAPPARIDACEAE I.

POLANISIA DODECANDRA (L.) DC., THE CORRECT NAME FOR POLANISIA GRAVEOLENS RAFINESQUE

HUGH H. ILTIS

AMONG the large number of poorly known binomials that had to be considered in working out the synonymy of the New World species of *Cleome* (Iltis, 1952) was the Linnaean *Cleome dodecandra* described in the first edition of the *Species Plantarum* (1753). Trying to discover to what plant this binomial applied was both intriguing and difficult. Since modern nomenclature started with the *Species Plantarum* it appeared very likely that I was dealing with a valid name of some member of the *Cleom-oideae*. On the other hand, perusal of various floras and reference works did not help much in this matter and only increased the difficulty, since the name had rarely appeared in the literature, and when used, it was applied to plants from as widely separated localities as Madagascar (Durand and Schinz, 1897), North America (often as *C. dodecandra* Michx. not L.), Jamaica, Ceylon, and India, the last three cited by Linnaeus in the original description. Such a distribution is of course open to suspicion. The name does not appear in any contemporary floristic work, such as Fernald's 8th edition of Gray's Manual (1950) or Gleason's New Illustrated Flora (1952).

What, then, is *Cleome dodecandra* L.?

The original description in the *Species Plantarum* of 1753 consists solely of three polynomials from earlier works and reads as follows (p. 672):

- dodecandra*. 5. CLEOME floribus dodecandris, foliis ternatis. *Fl. zeyl.* 242.*
 Sinapistrum triphyllum pumilum glabrum, flosculo purpureo,
 siliqua membranacea. *Burm. zeyl.* 216. t. 100. f. I
 Sinapistrum indicum triphyllum, flore carneo, non spinosum.
Sloan. jam. 80. *hist.* I. p. 194. t. 124. f. I.
Habitat in Indiis. ☉

The first of these polynomials refers to Linnaeus' *Flora Zeylanica* of 1747 and will be discussed presently. The second is difficult to identify with certainty, but Burman's description and illustration might well apply to a young *Cleome rutidosperma* DC. (*C. ciliata* Schum. & Thonn.) or to *C. Burmanii* W. & A., both species of the paleotropics. The last polynomial very clearly represents *Cleome serrata* Jacq., common in the neotropics. Both De Candolle (1824) and Eichler (1865) came to the same conclusion.

The citation in the *Flora Zeylanica* consists of two parts: 1.) two polynomials, one of Boerhave, which is unidentifiable, and that of Burman discussed above; 2.) a description, which is given here in full (p. 109):

Descr. Caulis herbaceus, longitudine priorum. Folia ternata, foliolis lanceolato-ovatis. Florum corolla alba, pistillum rubrum; petala emarginata: stamina octo: glandula ad basin germinis a latere superiore. Capsula crassa, hispida.

There can be no question that this brief though unmistakable analysis refers to a North American entity which, since the early part of the 19th century, has been commonly called *Polanisia graveolens* Raf., a member of a small genus restricted to the New World and closely related to the Old World species of *Cleome*. This assertion is based on the fact that 1.) emarginate petals occur within the whole of the *Cleomoideae* only in the species of *Polanisia sensu stricto*; 2.) a large, unilateral gland at the adaxial base of the ovary, pointing upward in the open flower, is characteristic of *Polanisia*; and 3.) the number of stamens (i.e. more than 6) is characteristic of relatively few species of *Cleome* but is the usual condition in *Polanisia*. All other characters, such as flower-color, leaflet-shape, etc. agree well with *Polanisia graveolens* Raf.

There is, fortunately, a specimen in the Linnaean Herbarium, 850.12 of Savage's (1945) Catalogue, which fits this analysis, as far as can be ascertained from a rather foggy photograph.¹

¹ Loaned to me through the courtesy of the Arnold Arboretum.

There are two names connected with this sheet, both written by Linnaeus: one, attached to the stem of the plant and clearly the older of the two, reads "HU 12-andr" (*Horto Upsalensi dodecandra*), while the other, written at the bottom of the sheet, reads "viscosa 5" with a question mark added by J. E. Smith. We can safely assume that this specimen represents one of the plants grown at Upsala² by Linnaeus and used by him in his description, and must therefore be considered the type of *Cleome dodecandra* L. The legend at the bottom of this sheet also sheds some light on this matter. Linnaeus, apparently in a lapse of memory, wrote "viscosa" instead of "dodecandra," which is quite incorrect, but placed the right number after it, namely the number 5, which refers to the fifth species of *Cleome* in the *Species Plantarum*, ed. 1., which is *C. dodecandra*! This interpretation of "viscosa 5" differs from that of Savage (1945) who believes the 5 to refer to "Syst. 12 & Sp. 2" (*Systema vegetabilium* ed. 12 and *Species Plantarum* ed. 2 ??). To add to the confusion, Linnaeus labelled another sheet (850.14) "dodecandra" (with a ? added by J. E. Smith), even though it is clearly one of the four sheets of *Cleome viscosa* L. (though not the type) in the Linnaean Herbarium.

It is significant that all the old collections of this species in the Bernhardt Herbarium of the Missouri Botanical Garden, and the Vahl and Rottböll Herbaria of the Botanical Museum of Copenhagen are labelled "C. dodecandra." It is also of interest that this species occurs commonly in the Northeastern United States and adjoining Canada, a region which was fairly well-known botanically during Linnaeus' day, and from where he must have indirectly received the seeds, even though he thought the plant a native of "India"!

In tracing the fate of *Cleome dodecandra*, we find that the astute Michaux, in his *Flora Boreali-Americana* (1803), recognized its true identity and equated it with the plants he found growing in America. Many other authors (Pursh, Nuttall, Barton, Bigelow) followed Michaux's interpretation in the twenty years that followed.

² Svenson (1945) points out that the *Flora Zeylanica* was based on herbarium specimens. Here we have apparently one exception, for this plant was reputedly cultivated at Upsala, where Linnaeus must have seen it alive. It is certain that this specimen did not come from Asia, though Linnaeus did not state where the plants or seeds were obtained.

Not so Rafinesque! When this great, ingenious eccentric came to America and found this plant to be common "on the gravelly banks of rivers and lakes," he correctly recognized 1) that there were many major morphological differences between the North American plant and the genus *Cleome*, and 2) that Linnaeus' *C. dodecandra* of the *Species Plantarum* was a mixture of species. In 1819 he therefore established a new genus, *Polanisia*, for this plant, renaming the epithet *graveolens*. Rafinesque wrote (1819 p. 378-9):

The type of the genus is the *Cleome dodecandra* of Linnaeus under which denomination many species were blended, which have no similitude with the real genus *Cleome*, differing in the calyx, corolla, nectarium, stamina, and fruit. I shall describe here that of North America, where 2 or 3 species exist, besides those of the West Indies, Africa, and Asia, which are totally different. . . . *Polanisia graveolens* . . . is the *Cleome dodecandra* of Michaux and Pursh.

It is curious that Rafinesque saw fit to use *C. dodecandra* as the basis for his new genus without retaining the Linnaean specific epithet. Apparently he was not sure of the identity of the taxa included by Linnaeus under that name, and it is doubtful whether he ever checked the reference in the *Flora Zeylanica*, which would have cleared up the confusion.

After 1819 *Cleome dodecandra* L. all but disappeared from the literature and Rafinesque's name was used commonly. In 1824, De Candolle enlarged *Polanisia* to nine species, including in it an unnatural assemblage of *Cleomoideae* with more than six stamens. In doing this he transferred *Cleome dodecandra* L. to *Polanisia*, at the same time recognizing *P. graveolens* as an equally valid species.

Polanisia dodecandra (L.) DC., like the Linnaean species on which it was based, has since that time been completely ignored in America and has been incorrectly applied only once or twice for some African taxa. Many authors, as for example Britton and Brown (1913), repeated Rafinesque's misconception by citing in synonymy under *Polanisia graveolens* Raf. "*Cleome dodecandra* Michx. 1803, not L. 1753.," not realizing that all three of these names referred to one and the same entity.

My studies indicate *Polanisia* to be a valid genus (Iltis 1950), though in a narrower sense than that of De Candolle.³ It in-

³ A thorough taxonomic and morphological discussion of *Polanisia* is in preparation, and will appear soon elsewhere.

cludes six North American taxa with emarginate to lobed petals, 8 to 20 stamens and unilateral disks with concave apices. Therefore *Cleome dodecandra* properly belongs in *Polanisia*.

Thus the synonymy of the species is as follows:

- POLANISIA DODECANDRA (L.) DC. Prodr. 1: 242. 1824.
Cleome dodecandra L. Sp. Pl. ed. 1.2: 672. 1753; Michx. Fl. Bor.-Am. 2:32. 1803.
Polanisia graveolens Raf. in Am. Journ. Sci. 1: 379. 1819; Journ. Phys. Chim. Hist. Nat. 89: 98. 1819.
Cleome dodecandra L. var. *canadensis* L. ex DC. *loc. cit.* 1: 242. 1824, *nom. nud. in synonym.*
Cleome graveolens (Raf.) Schult. f. Syst. 7¹: 45. 1829.

A very complete enumeration of Rafinesque's own references to this species would be beyond the scope of this paper and would cover nearly a printed page (He must have been very proud of this genus and species!). A complete listing may be found in Merrill's *Index Rafinesquianus* (1949).

It may be of interest to note that there exists a very early, accurate illustration of this species in *tab. 131* of Cornut's *Canadensium Plantarum Historia* of (1635) reproduced as plate 1201. Though Linnaeus used this work in the preparation of the *Species Plantarum* (Svenson 1945), he must not have recognized the subject of this drawing. De Candolle (1824), however, did, and cited it under *Polanisia graveolens* Raf.—DEPARTMENT OF BOTANY AND BACTERIOLOGY, UNIVERSITY OF ARKANSAS, FAYETTEVILLE, ARKANSAS.

LITERATURE CITED

- BRITTON, N. L. and BROWN, A. 1913. Illustrated Flora of the Northern States and Canada, ed. 2. 2: 199.
 BURMAN, J. 1737. Thesaurus Zeylanicus. 216. t. 100. fig. 1.
 CORNUT, J. P. 1635. Canadensium Plantarum Historia. t. 131.
 DE CANDOLLE, A. P. 1824. Prodr. Systematis Naturalis Regni Vegetabilis. 1: 241-2.
 DURAND, TH. and SCHINZ, H. 1897. Conspectus Florae Africae 1²: 162.
 EICHLER, A. W. 1865. Capparidaceae, in Mart. Fl. Brasiliensis, 13¹: 257.
 FERNALD, M. L. 1950. Gray's Manual of Botany, ed. 8. 684.
 GLEASON, H. A. 1952. The New Britton and Brown Illustrated Flora. 2: 248.
 ILTIS, H. H. 1950. Morphology and Generic Delimitation in the *Cleomideae* of the New World. Unpublished MA. Thesis, Washington Univ. St. Louis, Mo. 1-32.
 ————. 1952. A Revision of the New World Species of *Cleome*. Unpublished PhD. Thesis, Washington Univ. St. Louis, Mo. 1-335.

- LINNAEUS, C. 1747. *Flora Zeylanica*. 109.
 ————. 1753. *Species Plantarum*, ed. 1. 2: 672.
 MERRILL, E. D. 1949. *Index Rafinesquianus*. 131.
 MICHAUX, A. 1803. *Flora Boreali-Americana*. 2: 32.
 RAFINESQUE, C. S. 1819. in *Am. Journ. Science*. 1: 378-9.
 SAVAGE, S. 1945. *A Catalogue of the Linnaean Herbarium*. London.
 SVENSON, H. K. 1945. On the Descriptive Method of Linnaeus. *RHODORA*
 47: 278.

NOTES ON SOME ROSES IN THE GRAY'S
 MANUAL RANGE

JULIAN A. STEYERMARK

IN an attempt to arrive at a satisfactory evaluation and disposition of the various taxa of *Rosa* occurring in Missouri, it became obvious that in both the latest Gray's Manual and in Gleason's Flora several taxa were not treated. Fernald states (p. 868) that "Only the clearer-cut species and varieties are here included. Many scores of recently proposed 'species' are omitted until their relative stability is better demonstrated." The following names: *R. conjuncta* Rydb., *R. petiolata* Rydb., *R. Bushii* Rydb., *R. Aucuparia* Rydb., *R. subserrulata* Rydb., *R. rudiuscula* Greene, and *R. Palmeri* Rydb. were based originally upon Missouri specimens. Two others, *R. polyanthema* Lunell and *R. relictata* Erlanson, were either based in part on or have been identified with Missouri material, and their status is of present interest.

Of this assemblage Fernald recognized *R. conjuncta* as a valid taxon. He relegated *R. Bushii* to synonymy under *R. arkansana* var. *suffulta*, a course of procedure with which the present author is in full agreement. The other names, however, have not been taken up in either of the above manuals, and it becomes necessary to dispose of them in relation to existing taxa.

In an effort to untangle these poorly defined and not clearly cut taxa, the various Missouri species described by Rydberg were studied from material borrowed from the New York Botanical Garden. I am deeply grateful to Mr. Frank Mac Keever, Custodian of the Herbarium, and to Dr. David D. Keck, Head Curator, for their courtesy in making this material available for my study.

As a result of these studies, it appears that none of the taxa listed above can be maintained, and that Fernald's treatment in